Space Weather Forecast

Issued on Wednesday 15 January 2025 at 13:07 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with occasional Common-class flares. There are seven sunspot regions. The largest is in the northeast, comprised of a large leader spot with a much smaller trailer region. The region in the southeast was the source of the strongest of the common class flares, and this has shown some growth in its intermediate spots, but is otherwise a relatively simple bipolar group. The other regions are relatively small and simple, however the region in the far northeast has the potential for more complexity to become evident as this moves onto the Earth-facing disc.

No Earth-bound coronal mass ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Ongoing fast wind influence was observed from a coronal hole, now hard to see on the western disc. Solar wind speeds were mainly elevated, between 450-500 km/s, with brief peaks towards 550km/s. Interplanetary Magnetic Field was mostly Weak, but rose to Moderate at the end of the period. The north-south component was weak, and variable in direction. Geomagnetic activity was Quiet to Unsettled (Kp1-3) with two Active (Kp4) intervals 15/0300-0900 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate with a chance of isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Ongoing coronal hole fast wind influence is expected, with a transition from the current source and into the one from the broad feature across the Suns southern hemisphere. Consequently faster solar winds are likely to persist for much of the period with slightly elevated to elevated solar winds forecast, perhaps peaking day 3-4. Mainly Quiet to Unsettled geomagnetic activity is expected with a chance of Active intervals on all days. There is a slight chance of reaching a G1 Minor Storm interval, perhaps slightly higher by days 3-4 (17-18 Jan).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background with no Solar Radiation Storms occurring.

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	50	60	60
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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